

ABSTRACT

One aspect of the present invention is a furnace component comprising an inorganic material that is exposed to a gas stream comprising hydrocarbon compounds, wherein at least a portion of the exposed inorganic material comprises a catalyst that promotes a hydrocarbon reaction to produce an olefin. The inorganic material may be a glass, a glass-ceramic, or a ceramic and may be coated onto the inside wall of a hydrocarbon cracking reactor or may be used as particles, powder, beads, monoliths, or other structured forms. The glass-ceramic material may further comprise a catalyst that facilitates carbon gasification.

Another aspect of the present invention provides a method of making a furnace component, the method comprising the steps of a) melting together the components of a base inorganic material and a catalyst that promotes a carbon reaction to produce an olefin and, b) cooling the melt to provide a solid composition.